



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **AMERICAN WARRIOR, INC.**
Well **CRIST NO. 1-28**
Field **WILDCAT**
County **FINNEY**
State **KANSAS**

Company **AMERICAN WARRIOR, INC.**
Well **CRIST NO. 1-28**
Field **WILDCAT**
County **FINNEY** State **KANSAS**

Location: API #: 15-055-22483-00-00

Other Services

SEC 28 TWP 21S RGE 34W
2288' FSL & 440' FWL

CNL/CDL
MEL/BHCS

Permanent Datum **GROUND LEVEL** Elevation **2979'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. 2990'
D.F. N/A
G.L. 2979'

Date	4/9/2018		
Run Number	ONE		
Depth Driller	5000'		
Depth Logger	4996'		
Bottom Logged Interval	4995'		
Top Log Interval	1700'		
Casing Driller	8.625" @ 1741'		
Casing Logger	1742'		
Bit Size	7.875"		
Type Fluid in Hole	CHEMICAL		
Salinity, ppm CL	2800		
Density / Viscosity	9.4 53		
pH / Fluid Loss	10.0 7.2		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	.75 @ 63		
Rmt @ Meas. Temp	.56 @ 63		
Rmc @ Meas. Temp	1.01 @ 63		
Source of Rmt / Rmc	CHARTS		
Rm @ BHT	.38 @ 126		
Operating Rig Time	4 HOURS		
Max Rec. Temp. F	126 DEGF		
Equipment Number	108		
Location	HAYS		
Recorded By	J. HENRICKSON		
Witnessed By	LUKE THOMPSON		

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

SCOTT CITY KANSAS
SOUTH TO GANO ROAD, 10 WEST, NORTH INTO

Log Measured From: KELLY BUSHING 11 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneerenergy.com 785-625-3858

Your Pioneer Energy Services Crew

Engineer: J. HENRICKSON
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: LUKE THOMPSON
Secondary Witness:
Secondary Witness:
Secondary Witness:

DatabaseC:\ProgramData\Warrior\Data\american_warrior_crist_1_28.db
Dataset field/well/stackml/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	126	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	-2	3	-230	53	Off	4996

Sensor	Offset (ft)	Schematic		Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58			GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC	37.48			CNT-M&W (tk10-MW)	5.50	3.50	100.00
CNSSC	36.73						
LSD DCAL SSD	28.43			CDL-M&W (168-986)	8.50	4.00	250.00
	28.42						
	27.93						
MCAL MI MN	19.83			ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools	7.58	4.00	65.00
	19.83						
	19.83						
RLL3 RLL3F	15.80 15.79						
CILD	8.00		DIL-M&W (PSI 978)	18.50	3.50	220.00	

CILM

4.70

SP

0.20

Dataset: american_warrior_crist_1_28.db: field/well/stackml/pass3.1
Total length: 43.08 ft
Total weight: 685.00 lb
O.D.: 4.00 in



MAIN PASS

Database File american_warrior_crist_1_28.db
Dataset Pathname stackml/pass3.1
Presentation Format dil2in
Dataset Creation Mon Apr 09 15:21:54 2018
Charted by Depth in Feet scaled 1:600

0 GAMMA RAY (GAPI) 150

2000 CONDUCTIVITY (mmho/m) 0

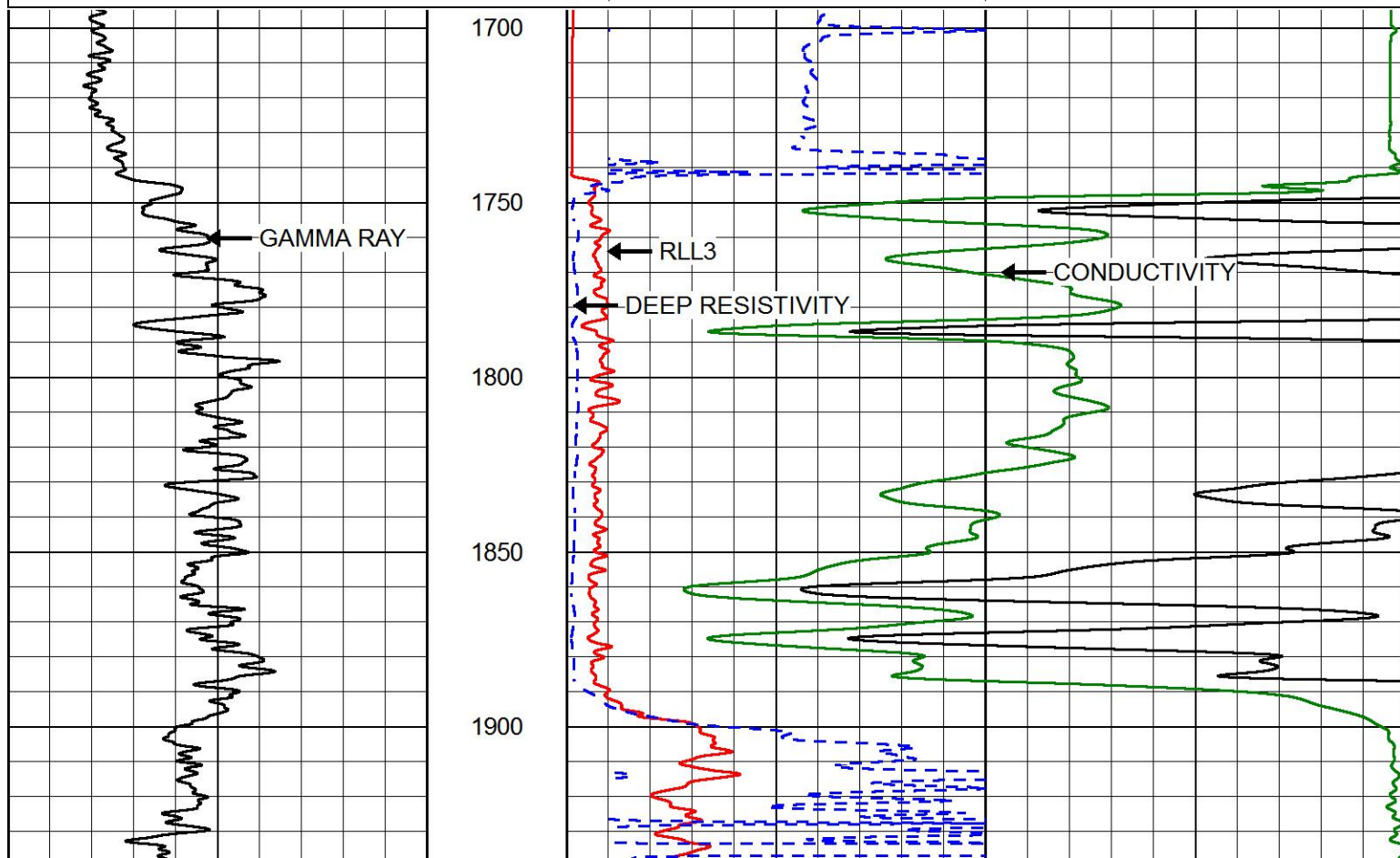
0 RLL3 (Ohm-m) 50

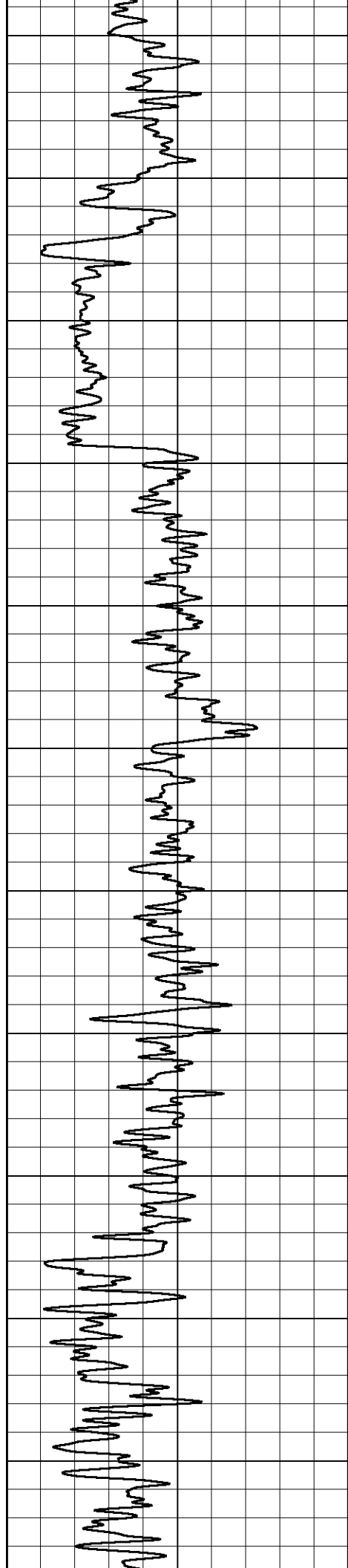
0 DEEP RESISTIVITY (Ohm-m) 50

50 RLL3 (Ohm-m) 500

DEEP RESISTIVITY

50 (Ohm-m) 500





1950

2000

2050

2100

2150

2200

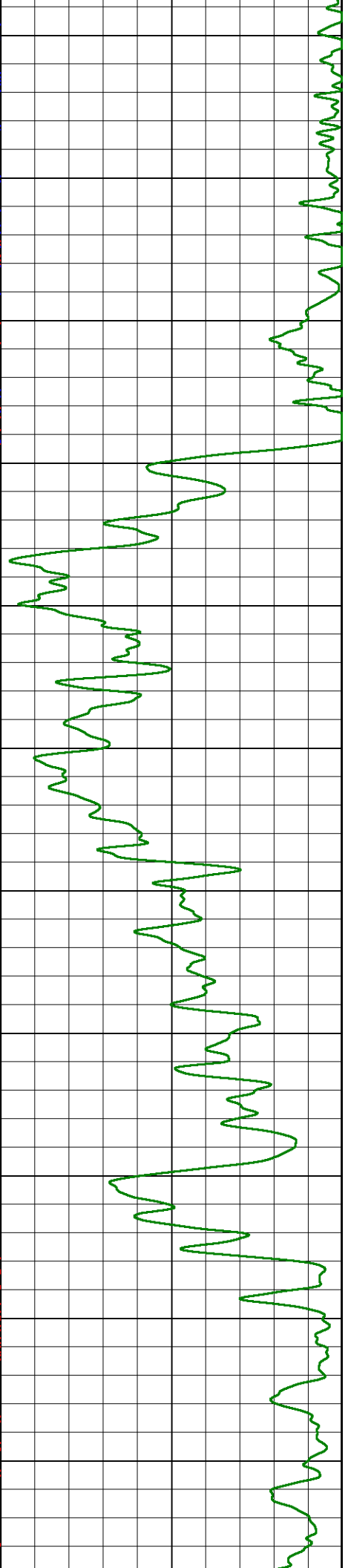
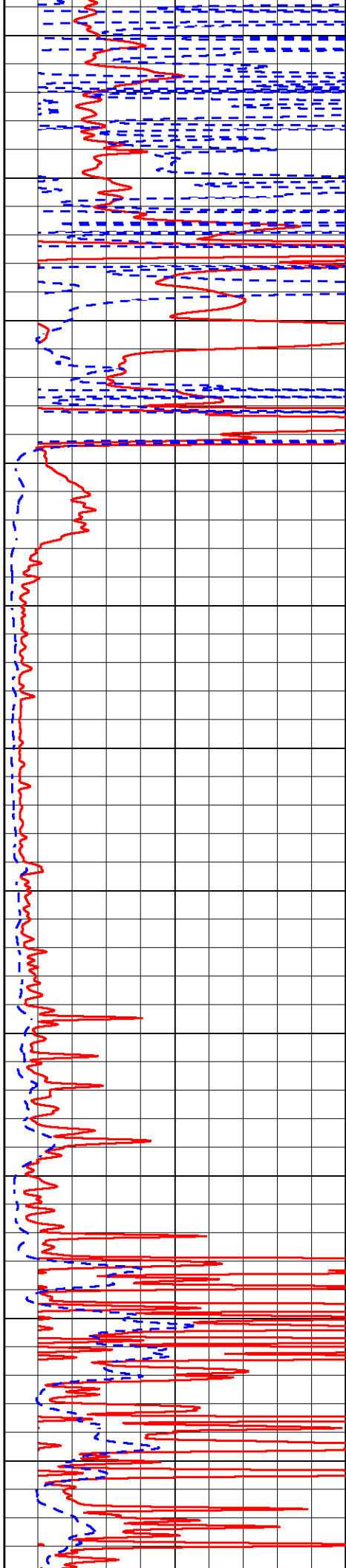
2250

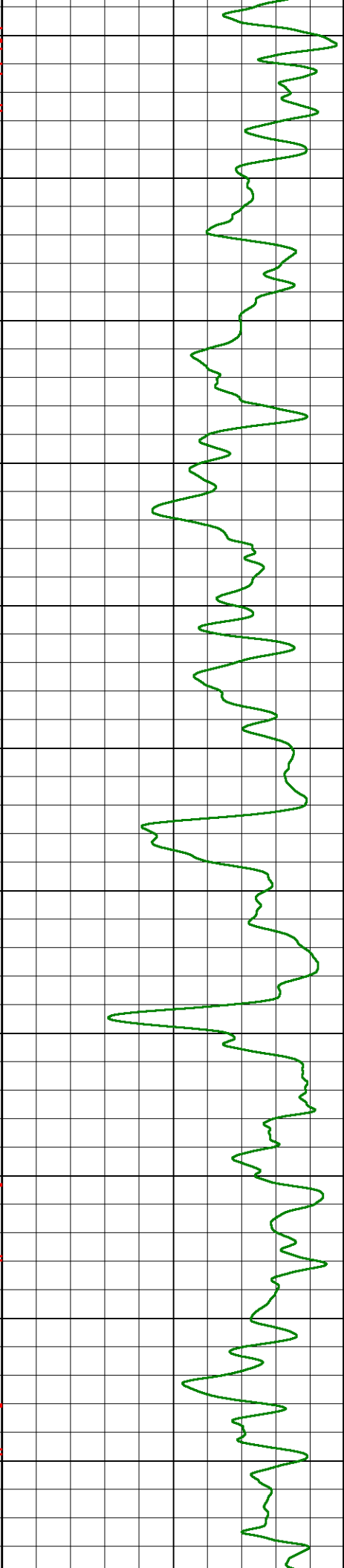
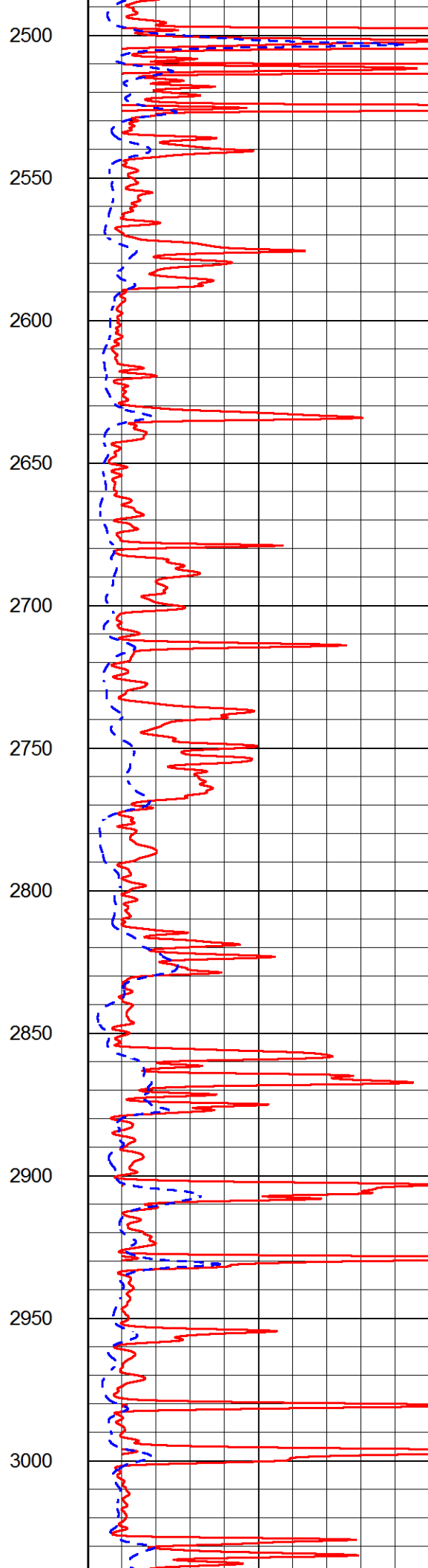
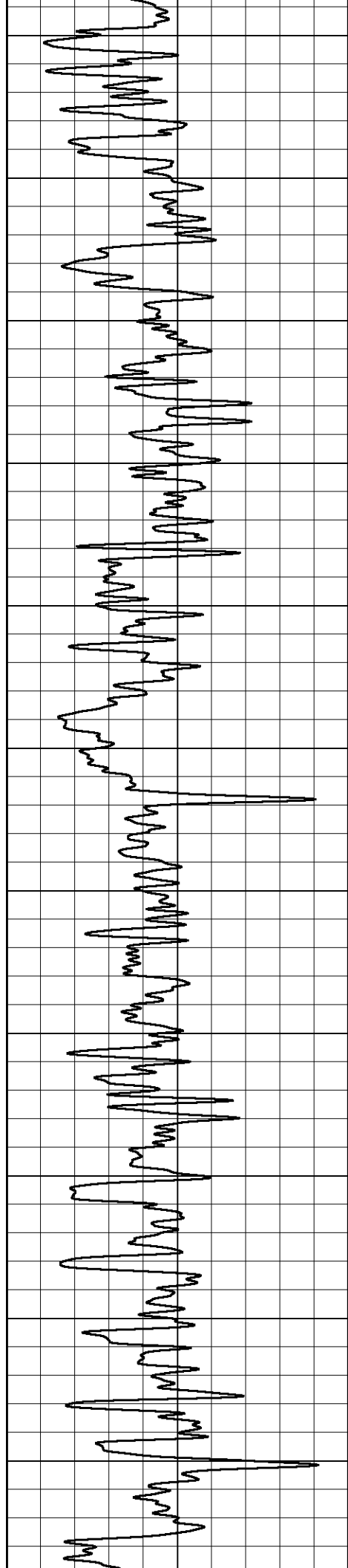
2300

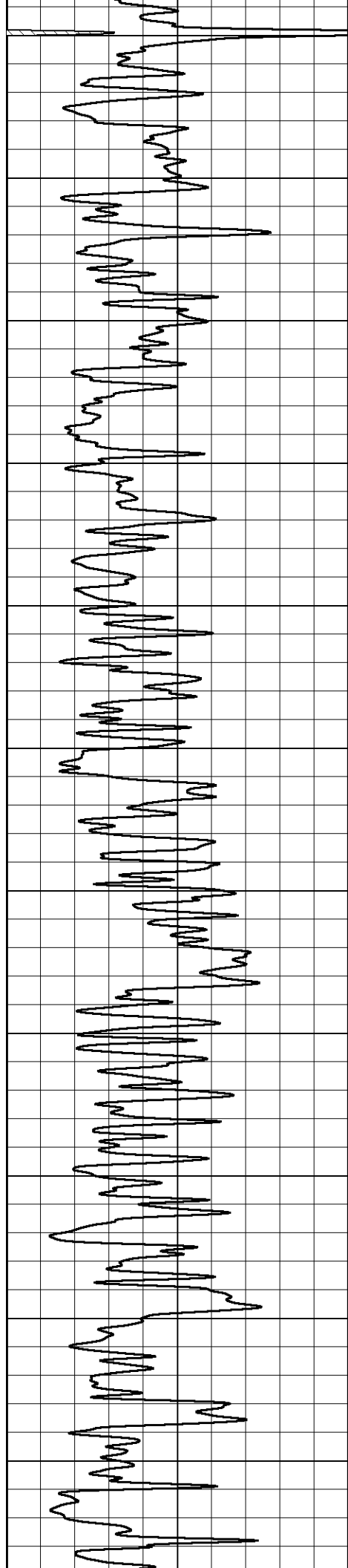
2350

2400

2450







3050

3100

3150

3200

3250

3300

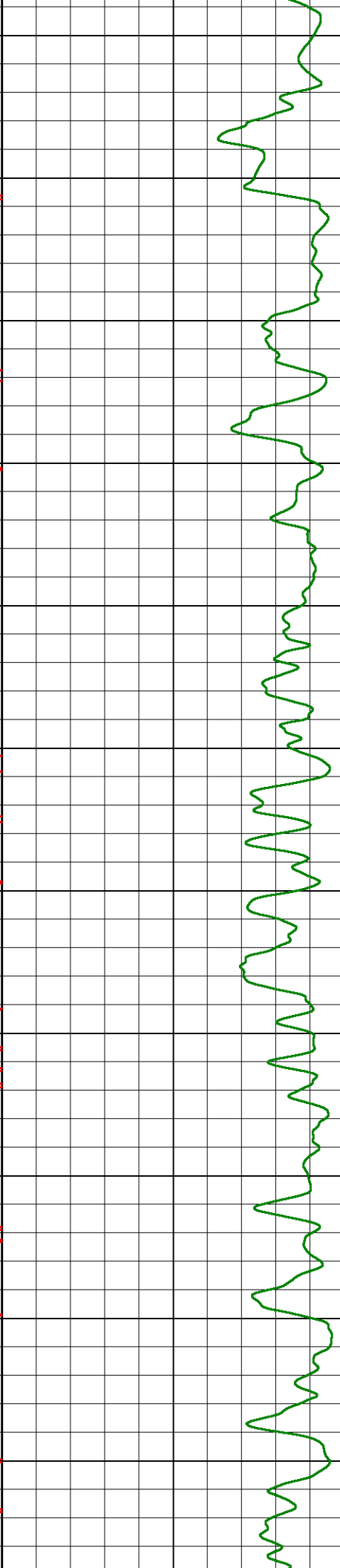
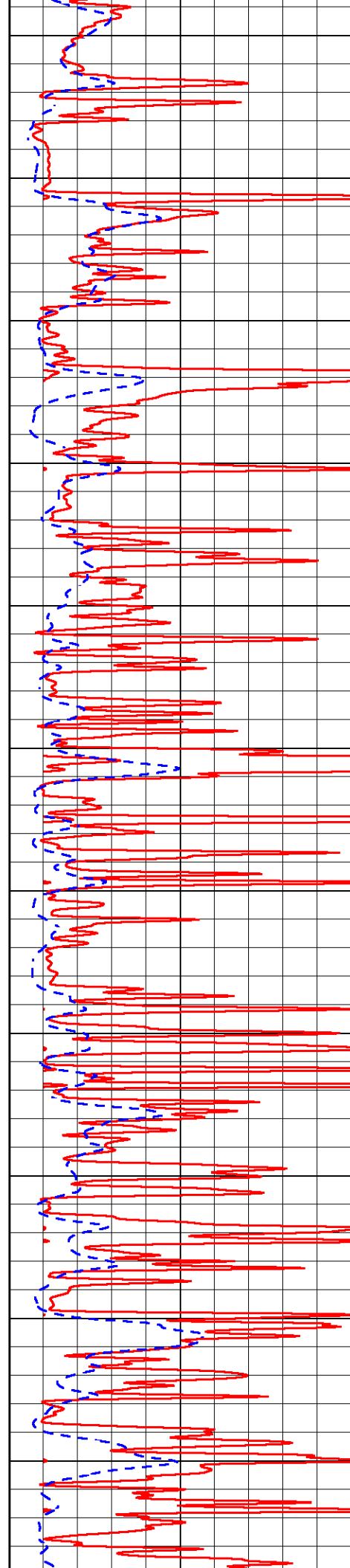
3350

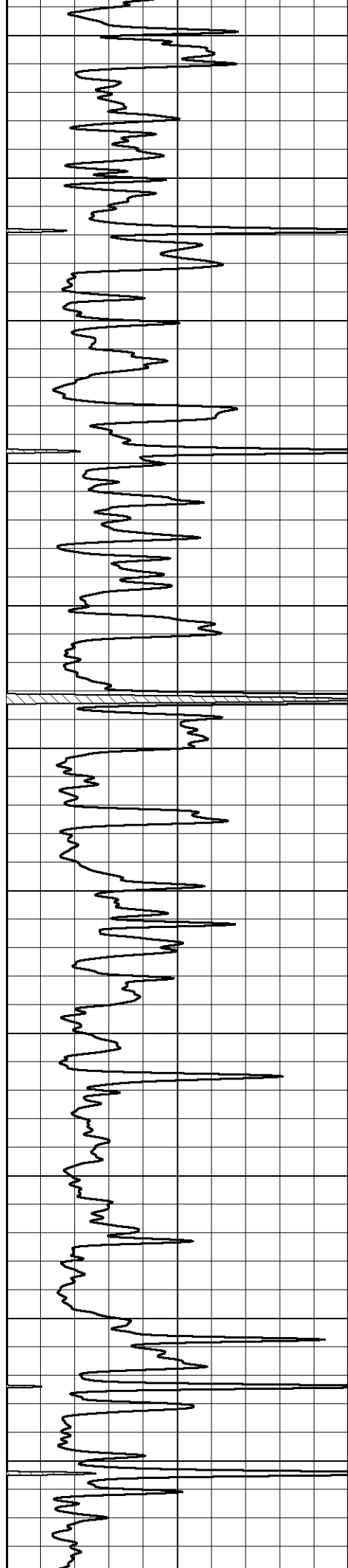
3400

3450

3500

3550





3600

3650

3700

3750

3800

3850

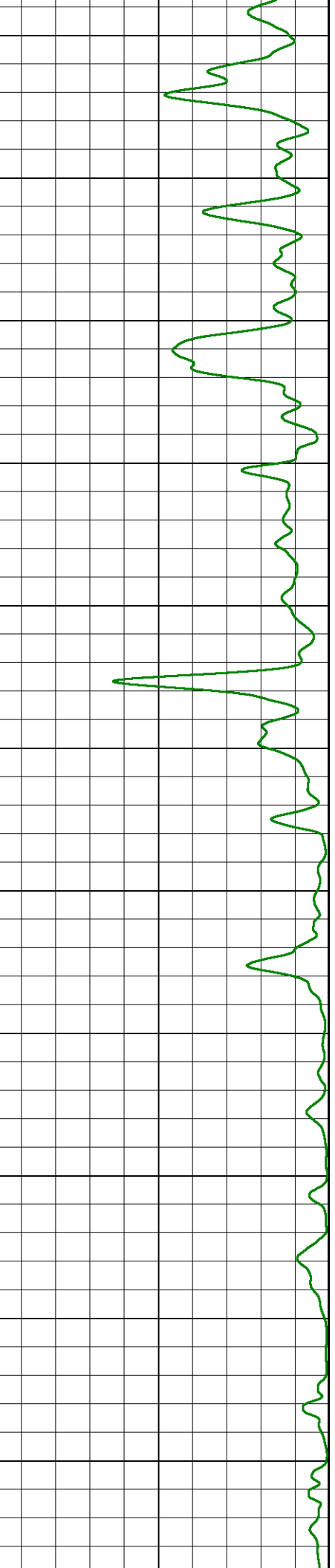
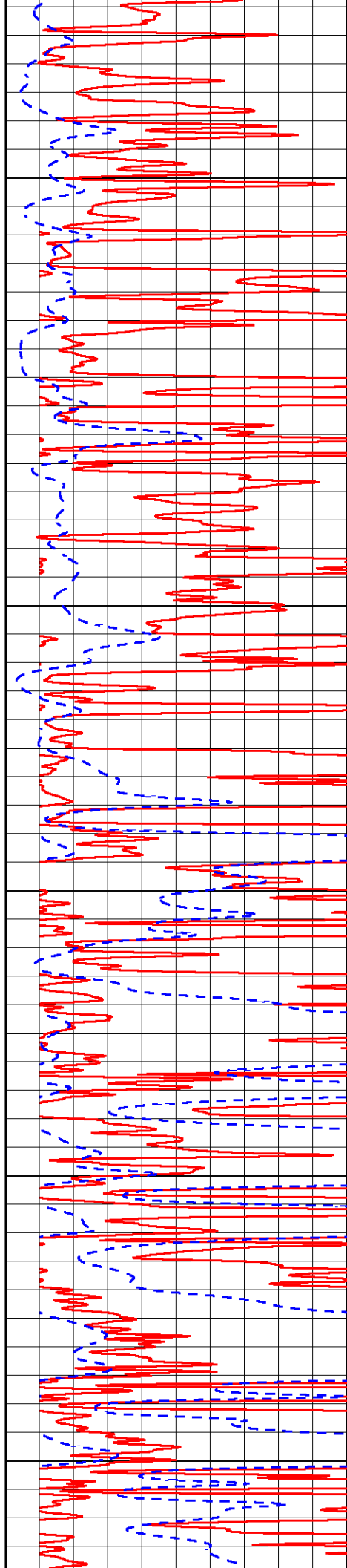
3900

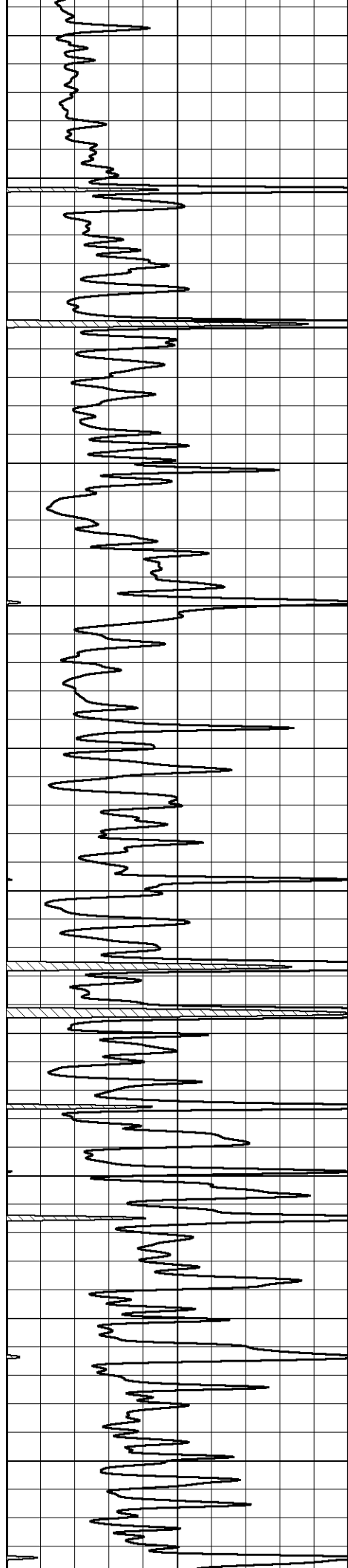
3950

4000

4050

4100





4150

4200

4250

4300

4350

4400

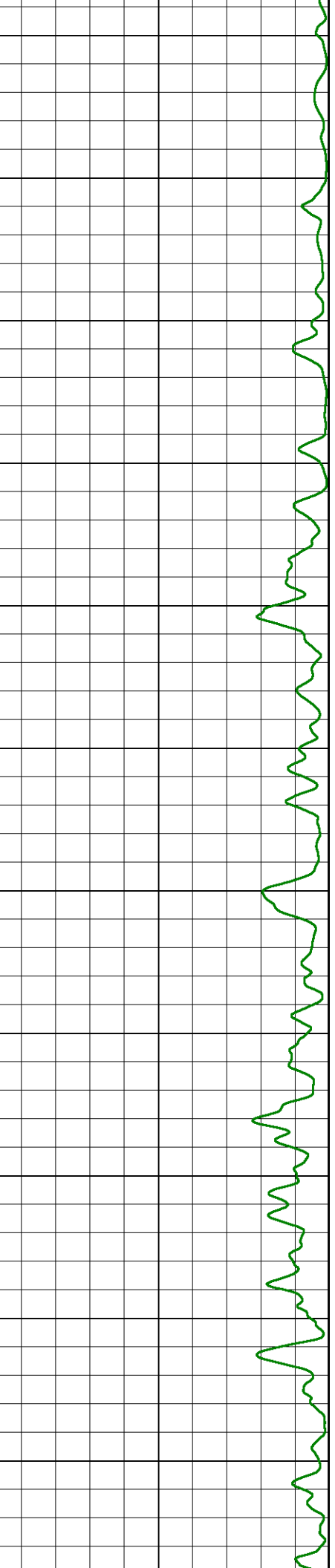
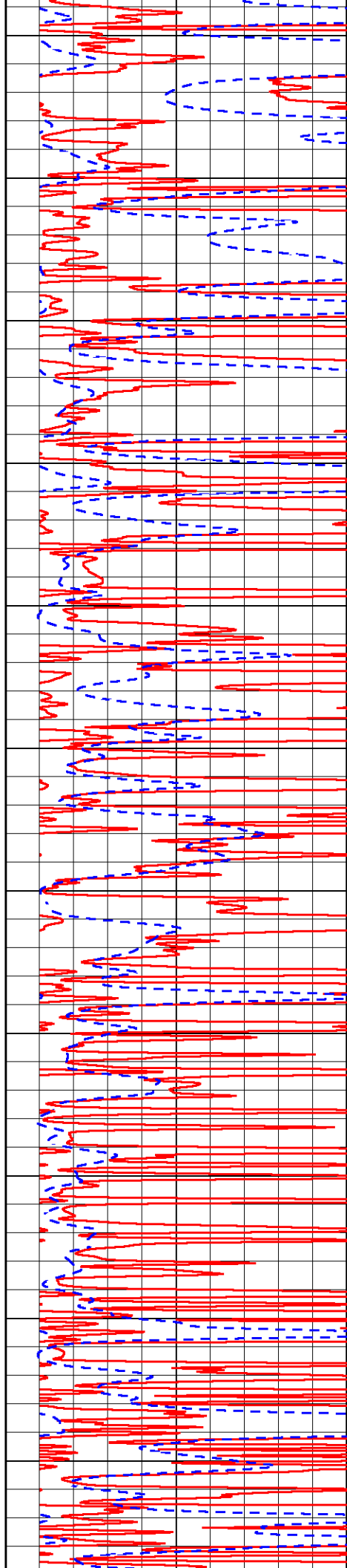
4450

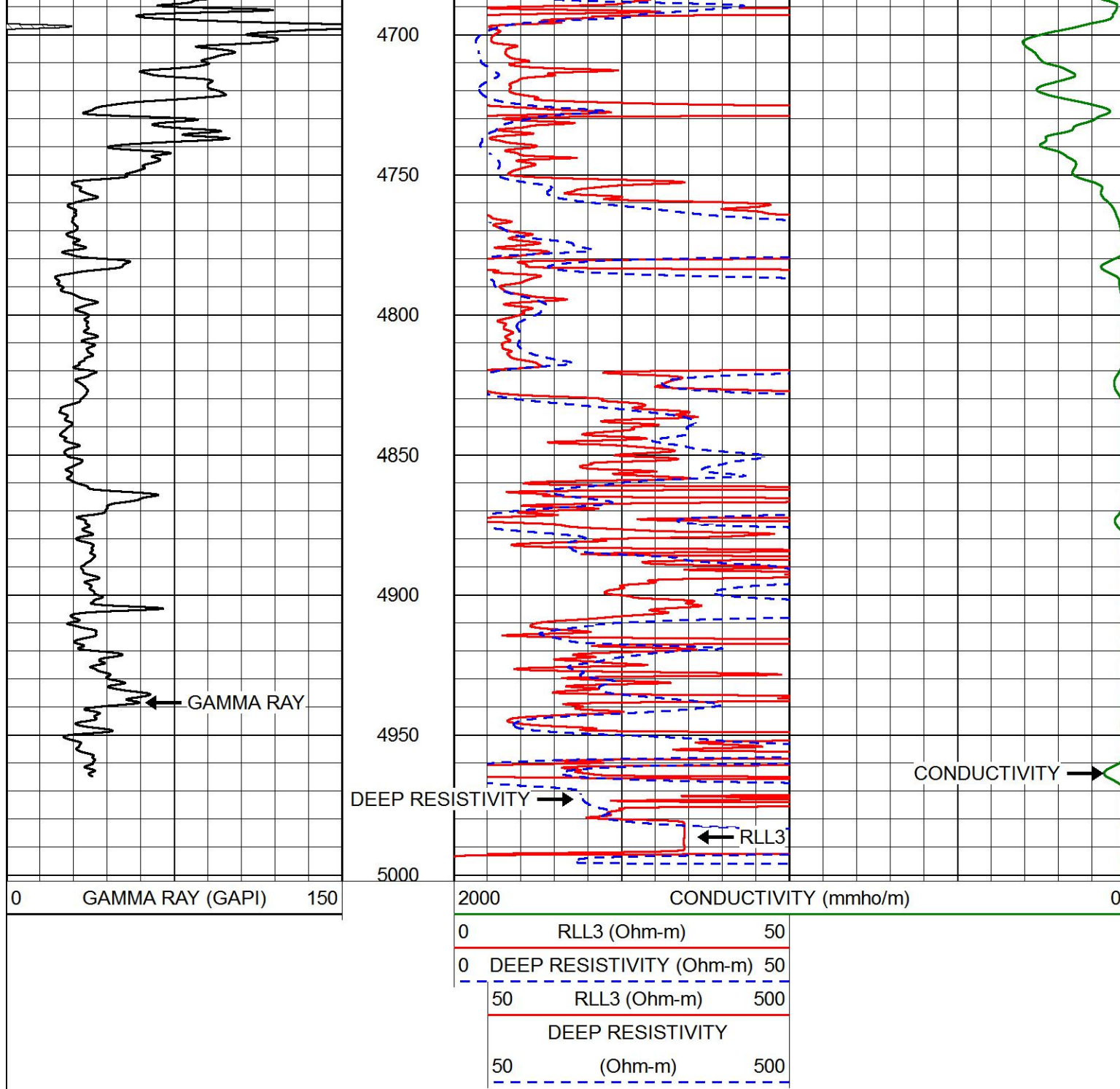
4500

4550

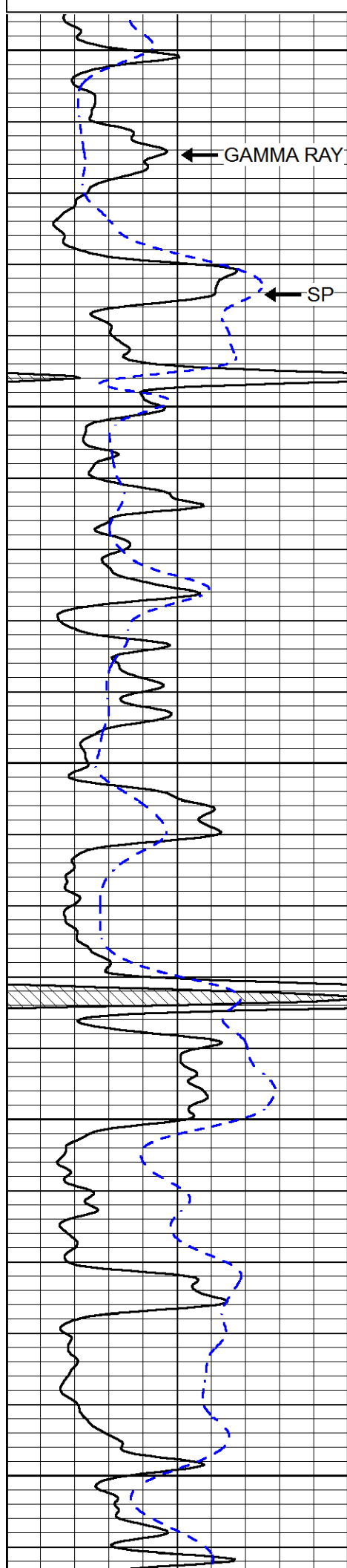
4600

4650





 MAIN PASS		
Database File	american_warrior_crist_1_28.db	
Dataset Pathname	stackml/pass3.1	
Presentation Format	dil	
Dataset Creation	Mon Apr 09 15:21:54 2018	
Charted by	Depth in Feet scaled 1:240	
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0



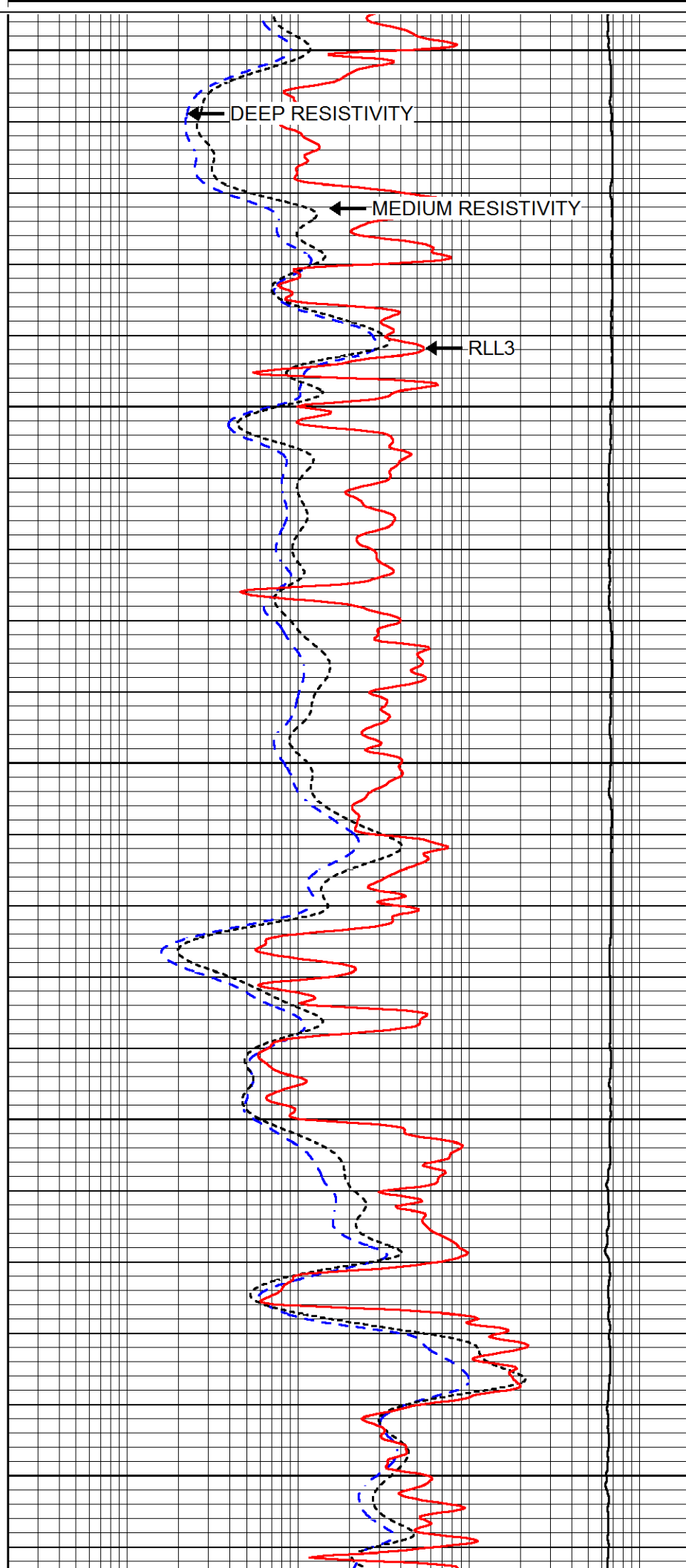
3700

3750

3800

3850

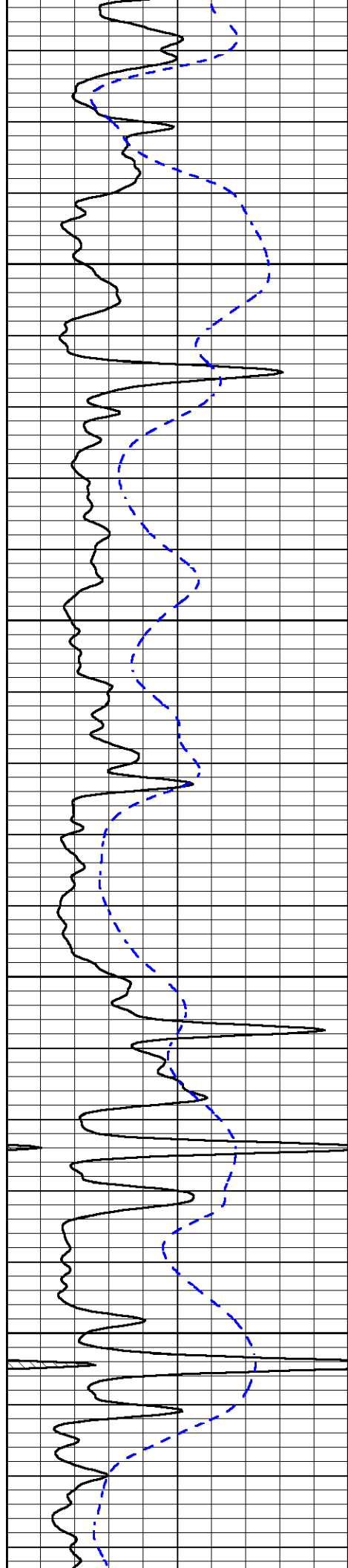
3900



DEEP RESISTIVITY

MEDIUM RESISTIVITY

RLL3

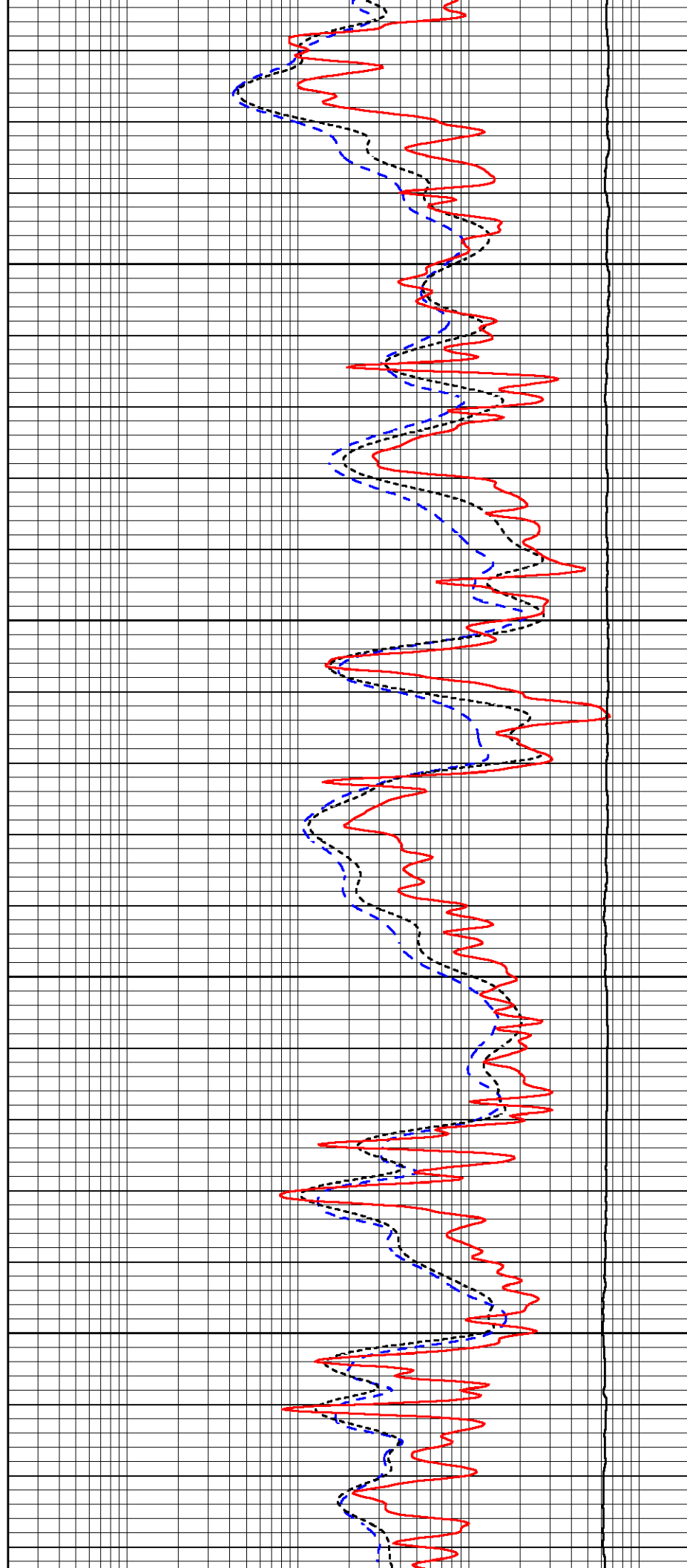


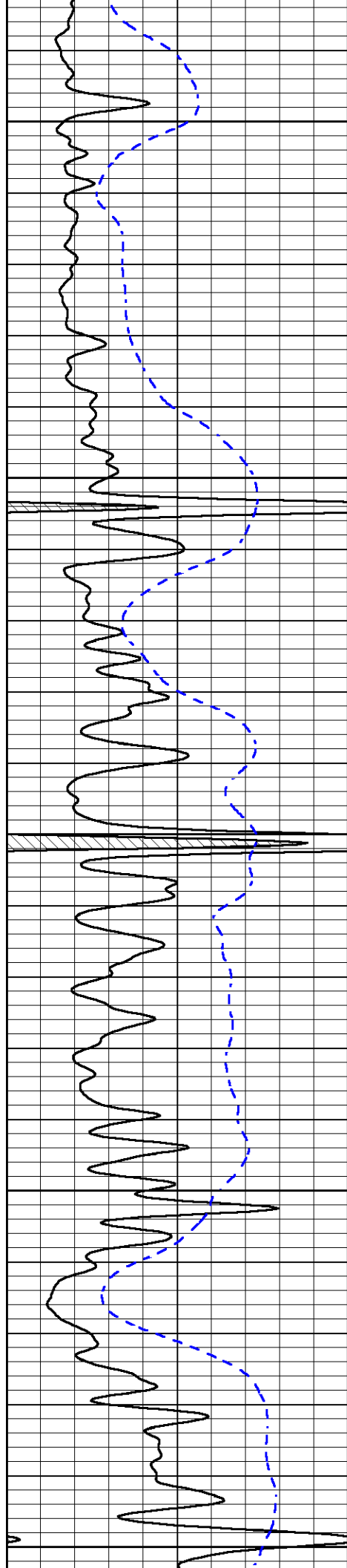
3950

4000

4050

4100





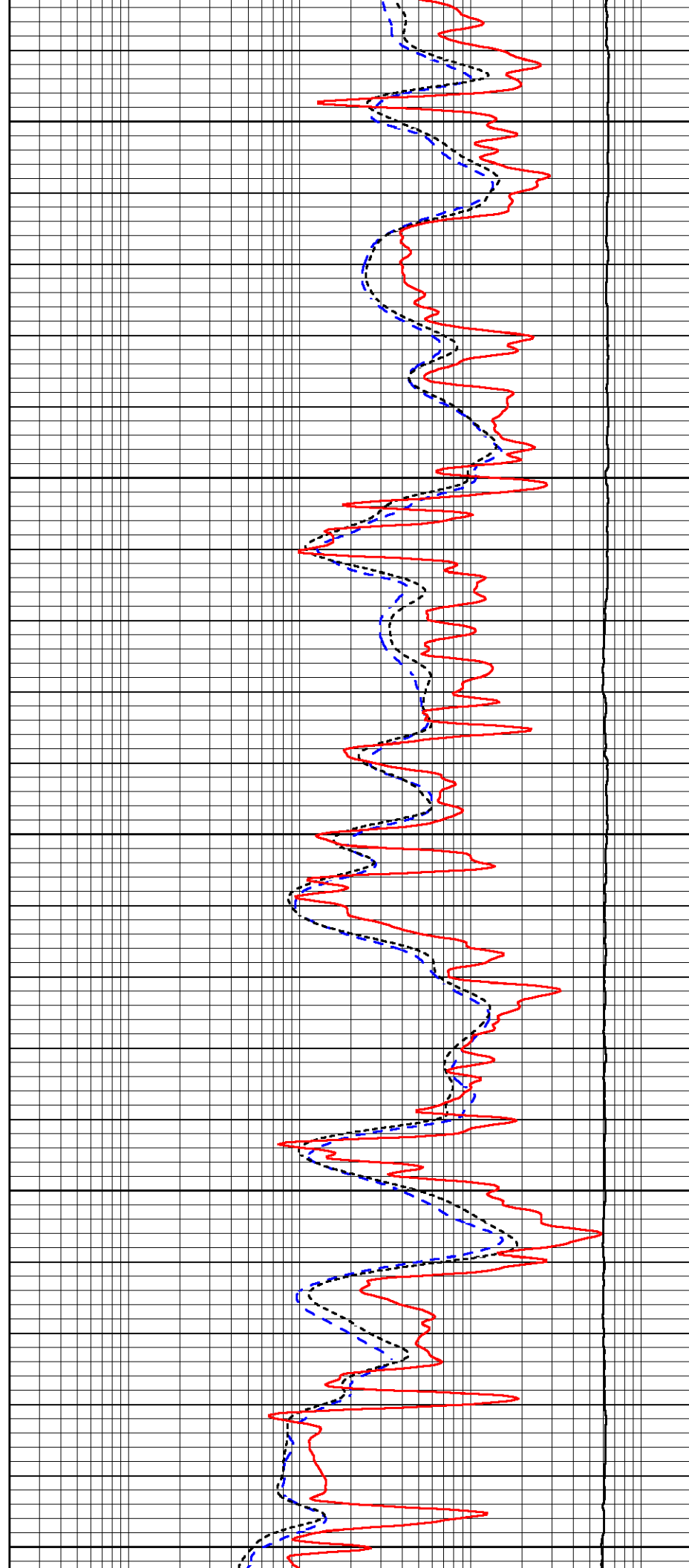
4150

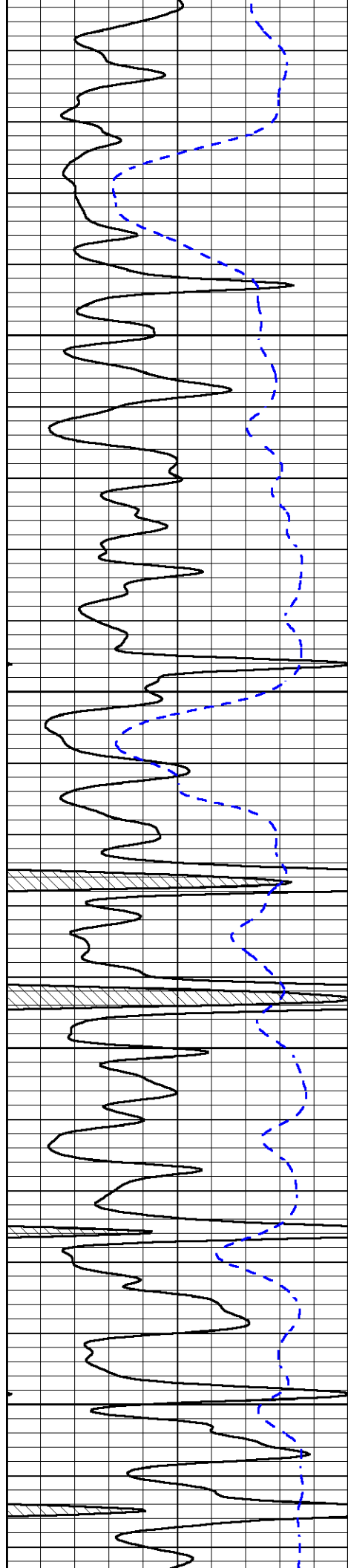
4200

4250

4300

4350



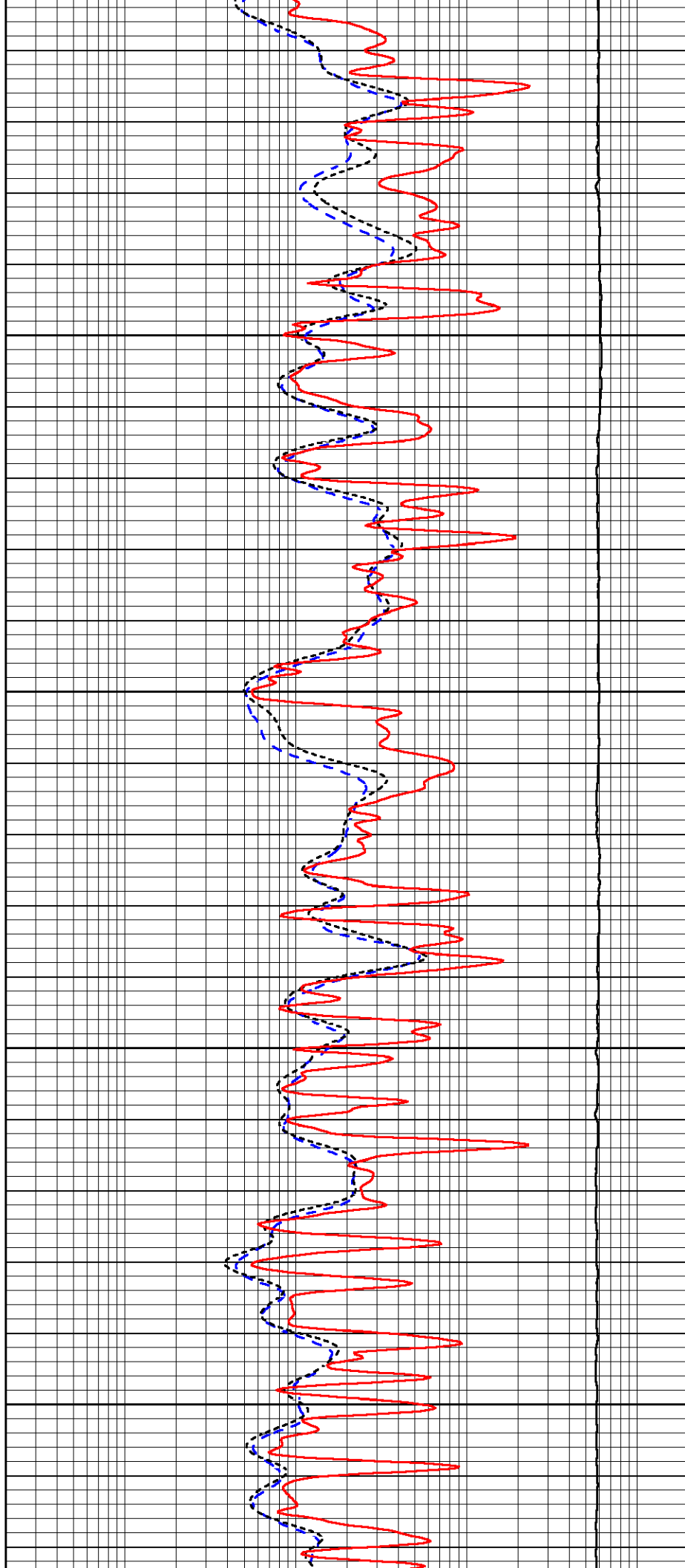


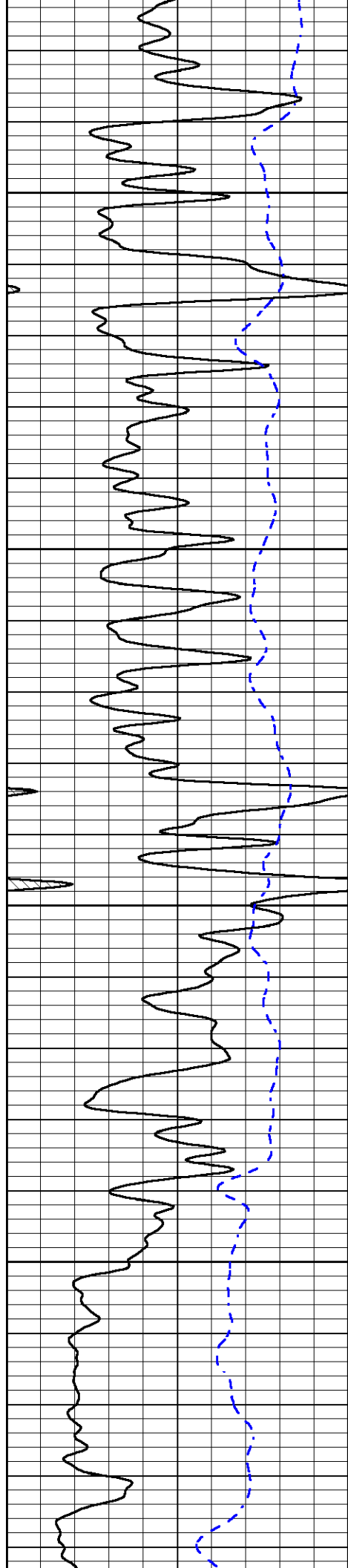
4400

4450

4500

4550



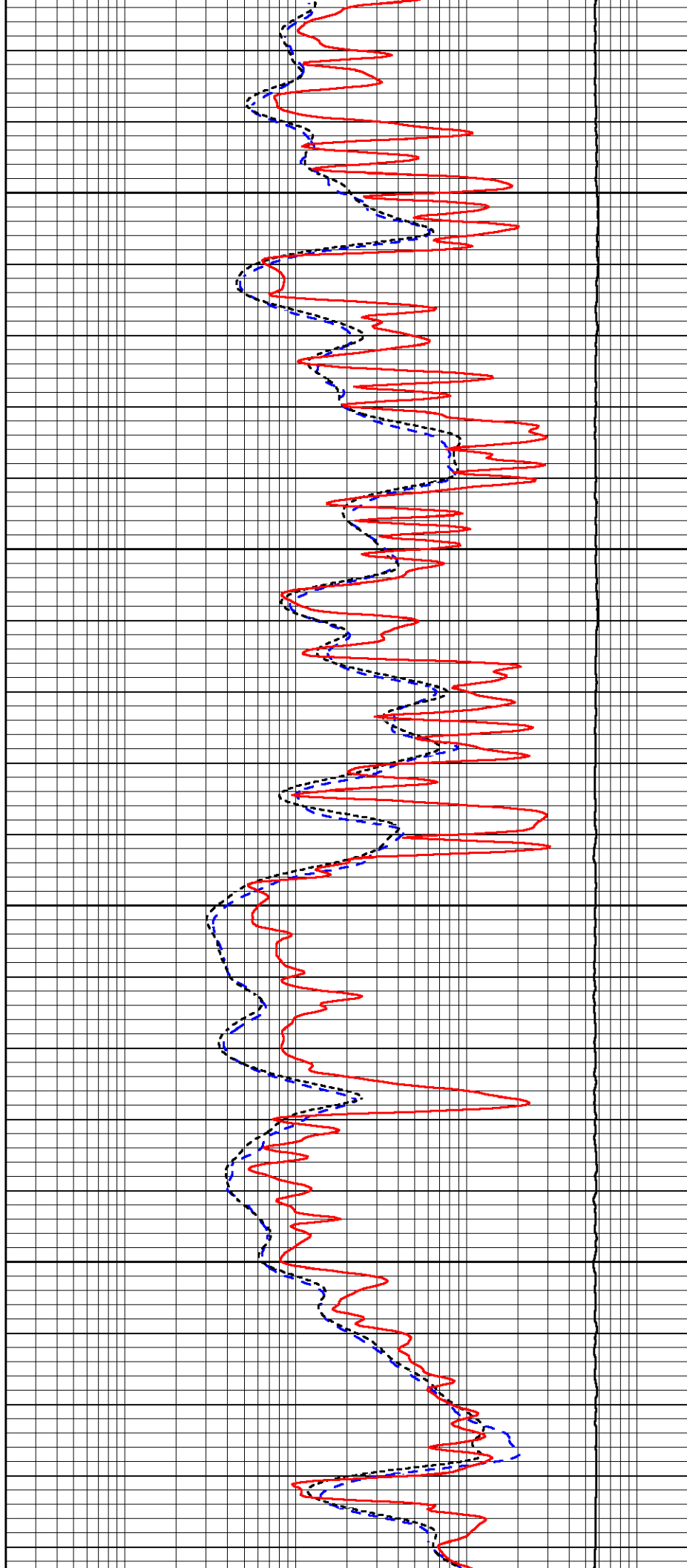


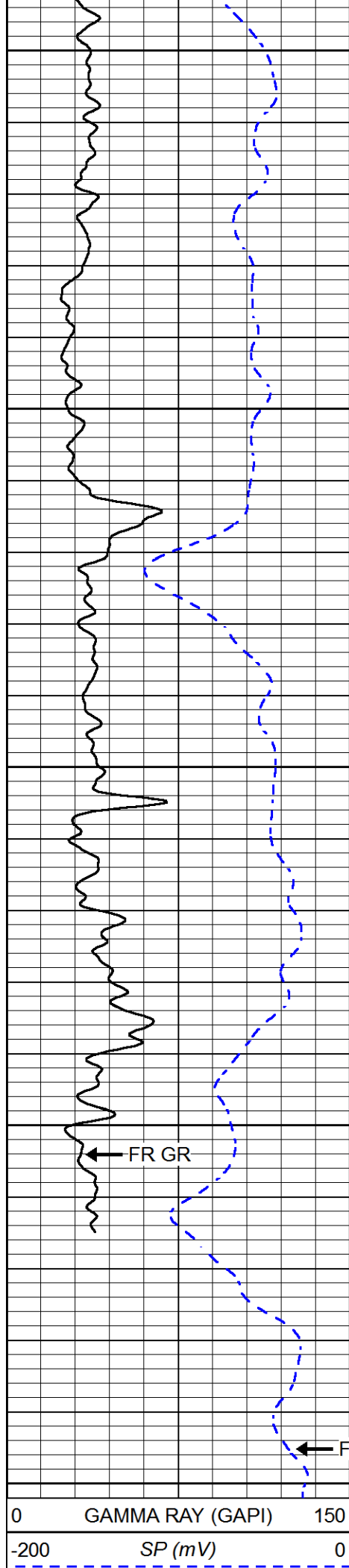
4600

4650

4700

4750





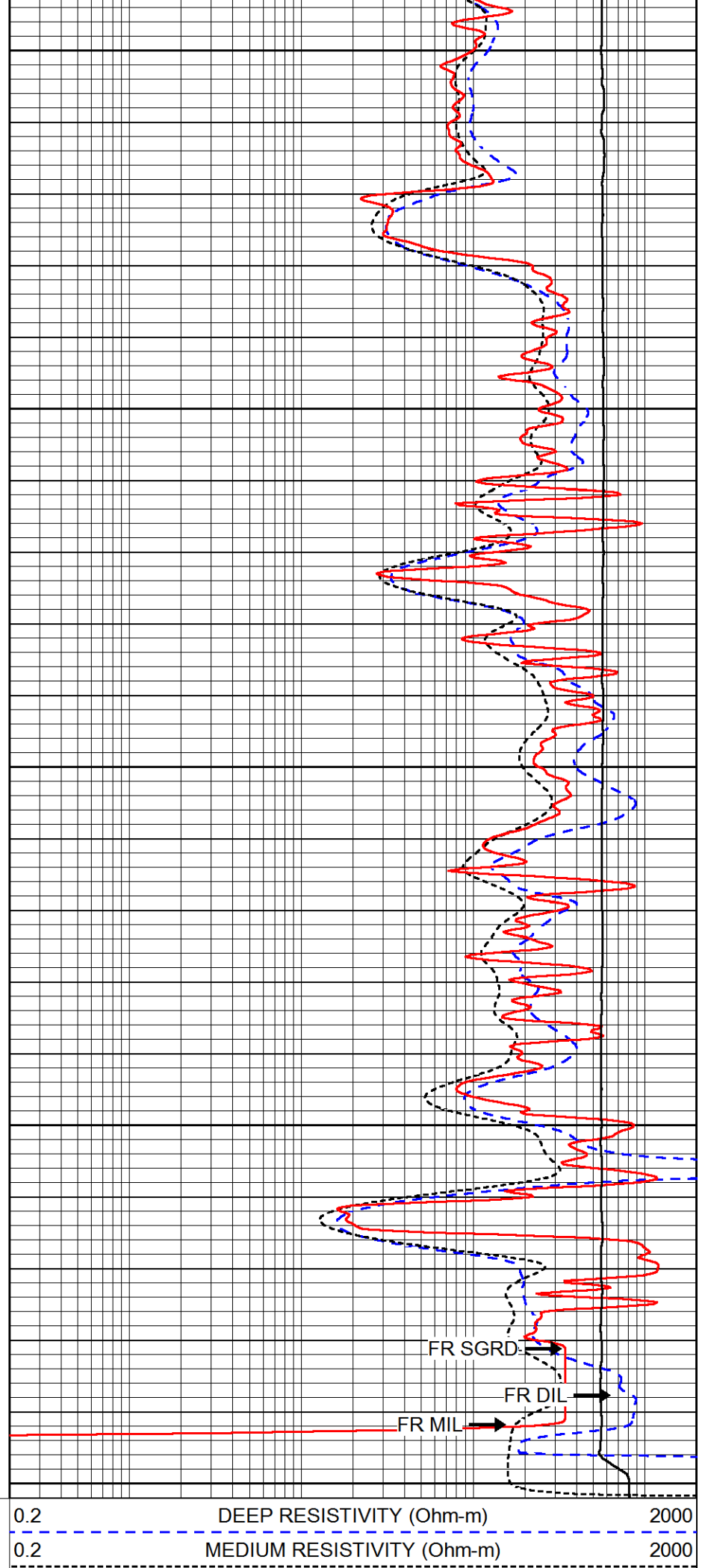
4800

4850

4900

4950

5000



0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

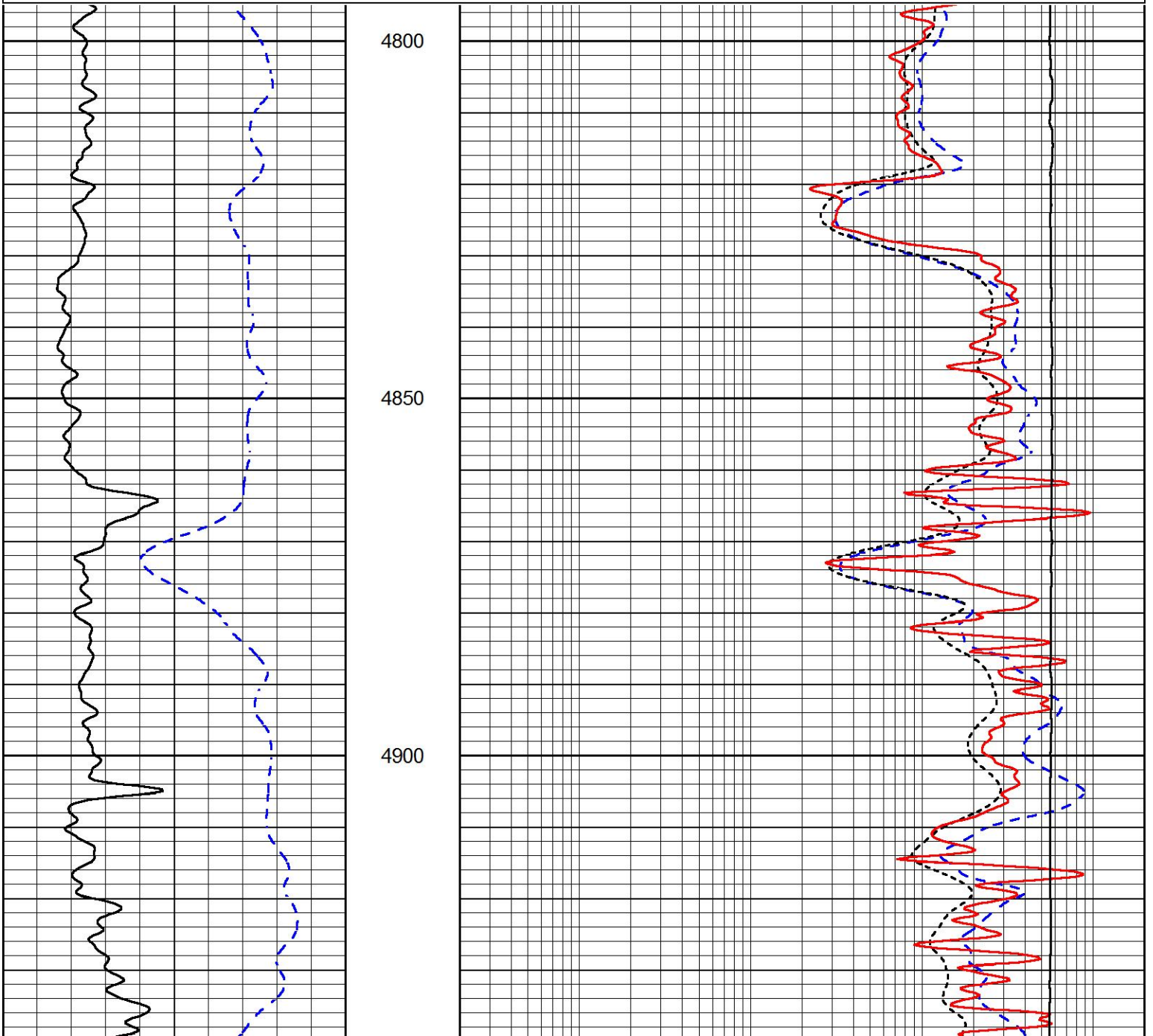


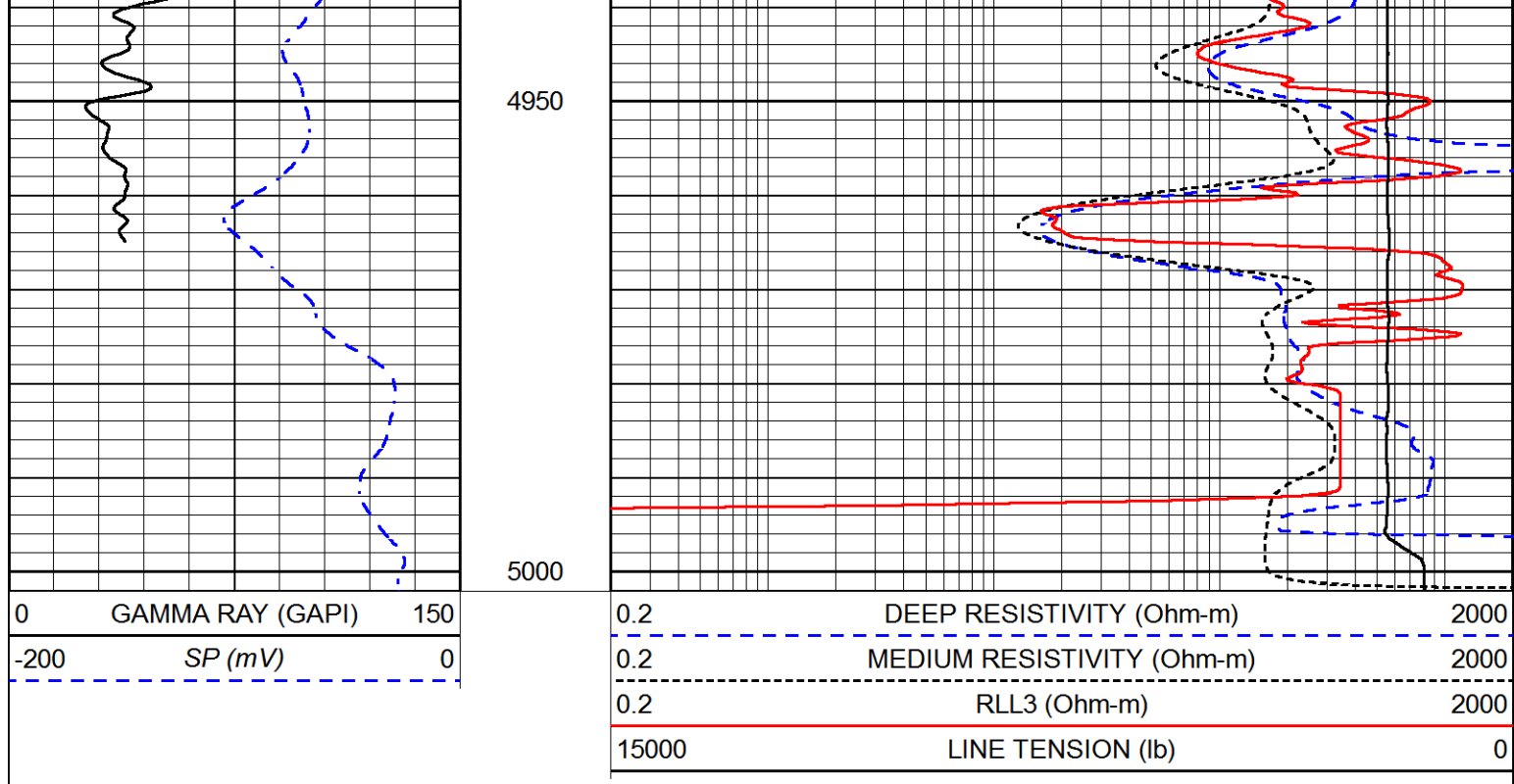
REPEAT SECTION

Database File american_warrior_crist_1_28.db
Dataset Pathname stackml/pass2.1
Presentation Format dil
Dataset Creation Mon Apr 09 15:24:20 2018
Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0





Calibration Report

Database File american_warrior_crist_1_28.db
 Dataset Pathname stackml/pass3.1
 Dataset Creation Mon Apr 09 15:21:54 2018

Dual Induction Calibration Report

Serial-Model: PSI 978-M&W
 Calibration Performed: Sun Feb 04 11:50:02 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.570	-40.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.400	-37.000

Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML
 Performed: Sat Apr 07 12:01:20 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	14000.0000	-1.0000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	12000.0000	0.0000
Caliper	1.0020	1.0834	5.5000	16.5000	in	135.1560	-131.8000

Compensated Density Calibration Report

Serial-Model: 168-986-M&W
 Source / Verifier: /
 Master Calibration Performed: Tue Apr 11 17:07:47 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4691.86	4818.19	cps
Aluminum	2.695	g/cc	859.57	3020.22	cps
Spine Angle = 74.61			Density/Spine Ratio = 0.534		
	Size		Reading		
Small Ring	4.00	in	1.00		
Large Ring	14.00	in	1.20		

Compensated Neutron Calibration Report

Serial Number: tk10-MW
Tool Model: M&W
Calibration Performed: Wed Nov 16 11:21:36 2016

Detector	Readings		Target	Normalization
Short Space	6240.00	cps	1000.00 cps	1.6025
Long Space	460.00	cps	1000.00 cps	1.9500

Gamma Ray Calibration Report

Serial Number: 89-M&W
Tool Model: M&W
Calibration Performed: Tue Apr 11 17:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



Company AMERICAN WARRIOR, INC.
Well CRIST NO. 1-28
Field WILDCAT
County FINNEY
State KANSAS